

1145-35-1310 **Hung D Le*** (hdlgw3@mail.missouri.edu), Columbia, MO 65201. *On the existence and instability of solitary water waves with a finite dipole.*

We investigate the existence and instability of two-dimensional traveling capillary-gravity water waves with a finite dipole. In particular, we consider the case where the fluid has infinite depth, and the vorticity is a sum of two weighted δ -functions. Using the implicit function theorem, we can construct a family of solitary waves for the finite dipole problem. Our main result is that this family is orbitally unstable. This is proved using a modification of the Grillakis–Shatah–Strauss method recently introduced by Varholm, Wahlén, and Walsh. (Received September 20, 2018)